Where to Start with NI ELVIS™

The National Instruments Educational Laboratory Virtual Instrumentation Suite (NI ELVIS) is a LabVIEW-based design and prototyping environment for university science and engineering laboratories.

NI ELVIS reduces the cost of lab equipment while reinforcing theory through hands-on learning. This document explains how to set up and configure NI ELVIS.

NI ELVIS has the following features:

- Open platform combining the NI ELVIS workstation, industry standard LabVIEW software, and NI data acquisition devices (DAQ).
- A digital multimeter (DMM), oscilloscope, function generator, variable power supply, Bode analyzer, digital signal analyzer, arbitrary waveform generator, digital reader, digital writer, impedance analyzer, two-wire current-voltage analyzer, and three-wire current-voltage analyzer.
- Flexibility to implement a system at a variety of curricula levels.

Conventions

The following conventions are used in this document:

» The **»** symbol leads you through nested menu items and dialog box options to a final action. The sequence **File»Page Setup»Options** directs you to pull down the **File** menu, select the **Page Setup** item, and select **Options** from the last dialog box.

This icon denotes a tip, which alerts you to advisory information.

This icon denotes a note, which alerts you to important information.

This icon denotes a caution, which advises you of precautions to take to avoid injury, data loss, or a system crash.

bold Bold text denotes items that you must select or click in the software, such as menu items and dialog box options. Bold text also denotes parameter names and hardware labels.

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italic	Italic text denotes variables, emphasis, a cross-reference, or an introduction to a key concept. Italic text also denotes text that is a placeholder for a word or value that you must supply.
`monospace`	Text in this font denotes text or characters that you should enter from the keyboard, sections of code, programming examples, and syntax examples. This font is also used for the proper names of disk drives, paths, directories, programs, subprograms, subroutines, device names, functions, operations, variables, filenames, and extensions.

What You Need to Get Started

To set up and use NI ELVIS, you need the following items:

- ❑ Hardware
  - NI ELVIS Benchtop Workstation
  - NI ELVIS Prototyping Board
  - 68-pin E/M Series data acquisition device
  - 68-pin E/M Series cable
  - NI ELVIS AC-DC power supply
  - Computer

Note Refer to the *NI Educational Virtual Instrumentation Suite (NI ELVIS) Hardware User Manual* for a complete list of supported devices.

- ❑ Software
  - LabVIEW 7.1 or later
  - NI-DAQmx 8.1 or later
  - NI ELVIS software CD
- ❑ Documentation
  - *Where to Start with NI ELVIS*
  - *NI Educational Virtual Instrumentation Suite (NI ELVIS) Hardware User Manual*
  - *NI-DAQmx for USB Devices Getting Started Guide*
  - *DAQ Getting Started Guide*
  - E/M Series DAQ device documentation

You can download NI documents from `ni.com/manuals`.

Unpacking

The NI ELVIS Benchtop Workstation and the NI ELVIS Prototyping Board ship in antistatic packages to prevent electrostatic damage. Electrostatic discharge can damage several components on the NI ELVIS hardware.

Caution *Never* touch the exposed pins of connectors.

To avoid such damage in handling the workstation and prototyping board, take the following precautions:

- Ground yourself using a grounding strap or by holding a grounded object.
- Touch the antistatic package to a metal part of the computer chassis before removing the workstation or prototyping board from the package.

Remove the hardware from the package and inspect it for loose components or any sign of damage. Contact NI if the hardware appears damaged in any way.

Store the benchtop workstation and the prototyping board in the antistatic envelopes when not in use.

Installing NI ELVIS

This section describes how to install LabVIEW and NI-DAQmx, and the NI ELVIS software and hardware.

Installing LabVIEW and NI-DAQmx

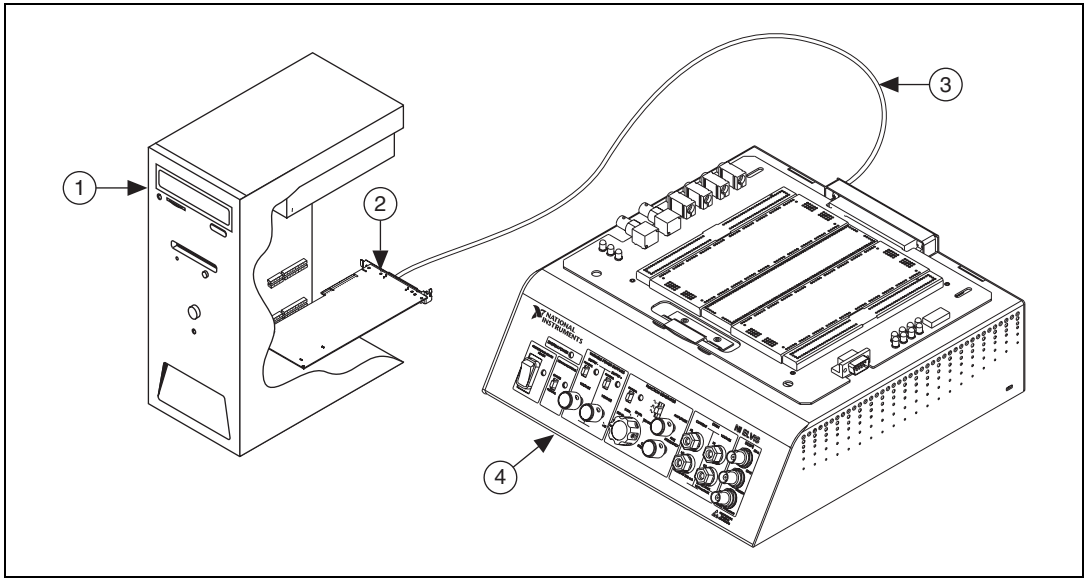
Note If you have NI-DAQmx 8.1 or later, LabVIEW 7.1 or later, and an E/M Series DAQ device installed, proceed to *Installing the NI ELVIS Software and Hardware*.

Complete the following steps:

1. Install LabVIEW 7.1 or later according to the instructions on the CD and the *LabVIEW Release Notes*.
2. Install NI-DAQmx version 8.1 or later according to the instructions on the CD, which is included with the DAQ device. You can also install NI-DAQmx from `ni.com/downloads`.

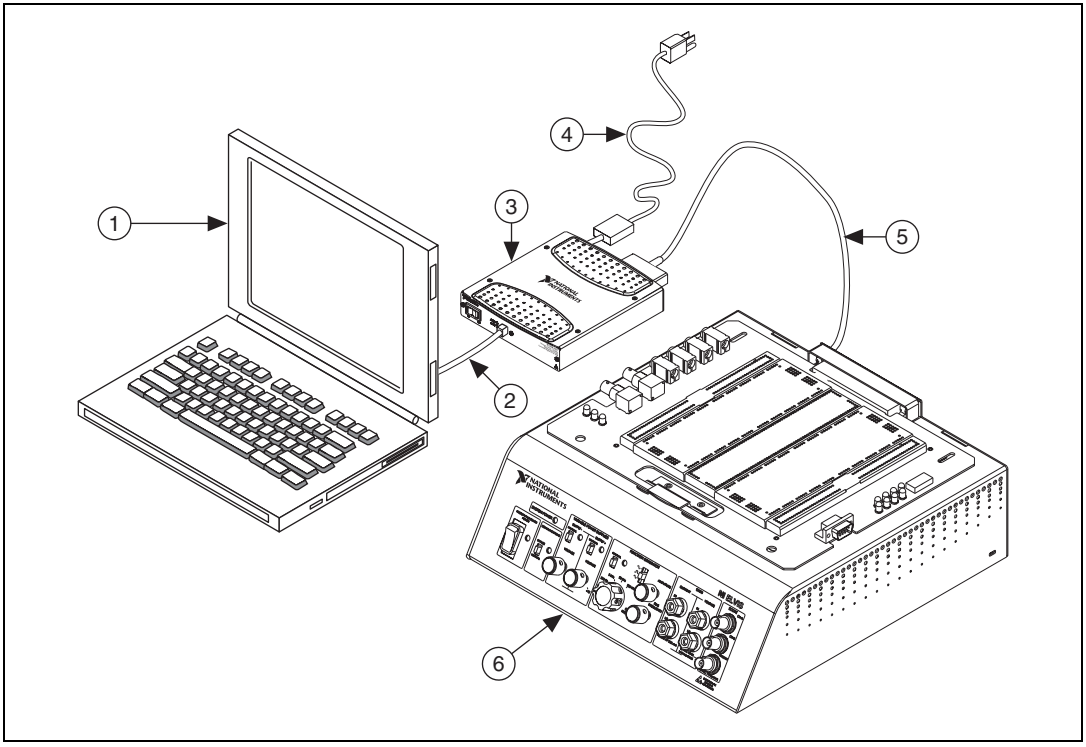
Caution It is important to install NI-DAQmx before installing the DAQ device to ensure that the device is properly detected.

3. When prompted to reboot, power off the computer.
4. Install the DAQ device according to the instructions in the *NI-DAQmx for USB Devices Getting Started Guide* or *DAQ Getting Started Guide* depending on your application.
5. Power on the computer.
6. Use Measurement and Automation Explorer (MAX) to verify and configure the DAQ device. To configure the device in MAX, refer to the *NI-DAQmx for USB Devices Getting Started Guide* or *DAQ Getting Started Guide*, available at `ni.com/manuals`, or the *Measurement & Automation Explorer Help for NI-DAQmx*, available by selecting **Help»Help Topics»NI-DAQmx»MAX Help for NI-DAQmx**. For operating system-specific installation and troubleshooting instructions, refer to the Hardware Installation/Configuration Troubleshooter page at `ni.com/support/daq`.



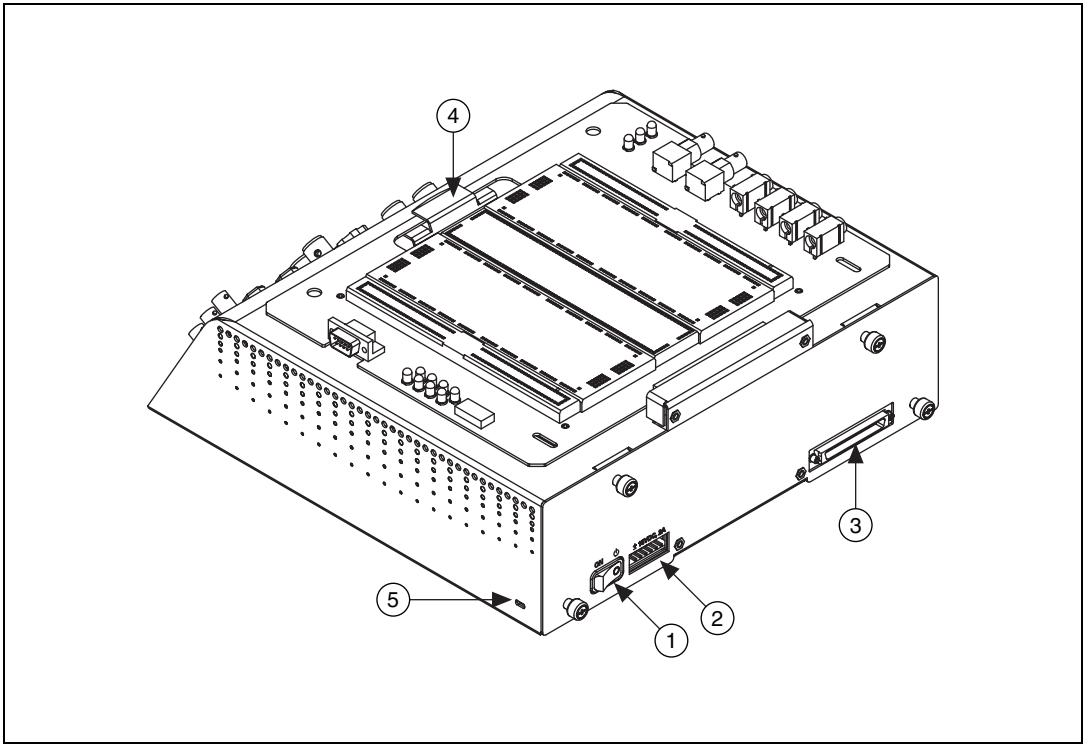
1 Desktop Computer	3 Shielded Cable to M Series Device
2 68-Pin M Series DAQ Device	4 NI ELVIS Benchtop Workstation

Figure 1. Parts Locator Diagram for NI ELVIS Desktop Systems



1	Laptop Computer	4	NI USB M Series Device Power Cord
2	USB Cable	5	Shielded Cable to M Series Device
3	NI USB M Series with Mass Termination Device	6	NI ELVIS Benchtop Workstation

Figure 2. Parts Locator Diagram for NI ELVIS Laptop System



1	Benchtop Workstation Power Switch	4	Prototyping Board Mounting Bracket
2	AC-DC Power Supply Connector	5	Kensington Security Slot
3	68-Pin DAQ Device Connector		

Figure 3. Back View of NI ELVIS Benchtop Workstation

You are now ready to install the NI ELVIS software and hardware.

Installing the NI ELVIS Software and Hardware

Refer to Figures 1 through 3 as you complete the installation process.

1. Insert the NI ELVIS software CD.
2. Click the **Install** option in the installation window that appears. Follow the setup instructions
3. When prompted to reboot, power off the computer.
4. Ensure that the power switch on the back of the benchtop workstation is switched to the off position.
5. Use the 68-pin cable to connect the DAQ device to the benchtop workstation.

Note When using a two connector M Series DAQ device, you must connect the cable to *Connector 0* on the M Series DAQ device.

6. Install the prototyping board by completing the following steps:
   a. Position the large opening in the prototyping board over the prototyping board mounting bracket.
   b. Slide the connector end of the prototyping board into the female connector on the benchtop workstation.
   c. Gently rock the board to ease it into place. It may be a tight fit, but do *not* force the board into place. Slide the prototyping board into the prototyping board mounting bracket.
7. Connect the AC-DC power supply to the NI ELVIS Benchtop Workstation.
8. Connect the power cord to the AC-DC power supply connector.
9. Plug the power cord into the wall outlet.
10. Power on the NI ELVIS hardware by first placing the workstation power switch in the On position and then placing the prototype board power switch in the On position. The system LED and the prototyping board power LEDs on the benchtop workstation should be lit, and all three DC Power Supplies LEDs on the prototyping board should be lit.

Note If the LEDs are not lit, the device is not receiving power. Check that the power cord is connected and that the power source is functioning properly.

NI ELVIS is now installed. You are ready to configure the NI ELVIS software.

Configuring the NI ELVIS Software/Hardware

The NI ELVIS software includes a set of software instruments referred to as the NI ELVIS soft front panel (SFP) instruments, as well as LabVIEW Express VIs and SignalExpress steps to program NI ELVIS in these environments.

To use the SFP instruments, you must set up the DAQ device to communicate with the benchtop workstation. To do this, complete the following steps:

1. Ensure that the DAQ device is properly installed and configured in MAX and that the benchtop workstation is powered on.
2. Launch the NI ELVIS Instrument Launcher by selecting **Start» Programs»National Instruments»NI ELVIS 3.0»NI ELVIS**.
3. Click the **Configure** button to launch the Configure Hardware dialog box.

Note If there is an error, the **Configure** button is the only button enabled.

4. Select the DAQ device that is cabled to the NI ELVIS hardware from the **DAQ Device** control. If only one DAQ device is detected inside the computer, this device is selected by default.
5. Click the **Check** button in the Communications portion of the window to verify communication with the NI ELVIS Benchtop Workstation.
6. If the configuration attempt is successful, a message appears in the Status window, indicating that the NI ELVIS Benchtop Workstation has been detected and configured. If the attempt fails, an error message appears, and the message in the Status window indicates that the configuration attempt has failed.
7. If the computer initializes the NI ELVIS hardware through the selected DAQ device, the NI ELVIS software is now configured. You can now begin to use NI ELVIS. If the configuration attempt fails, follow the recommendation given in the error dialog or return to the **DAQ Device** control and select a different device.

Tip You can click the **Reset** button available on this dialog box even after you have completed configuring the DAQ device. Click this button when you want to reset the NI ELVIS Benchtop Workstation using software. The DAQ device does *not* reset.

Refer to the *NI ELVIS Online Help* and *NI Educational Virtual Instrumentation Suite (NI ELVIS) Hardware User Manual* for more information about using the NI ELVIS instruments within LabVIEW or SignalExpress, or for more information about NI ELVIS features.

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